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ABSTRACT

Over the past 10 years, a handful of museums and school districts have joined forces to create an innovation that blends formal and informal learning, the museum school. As yet, there is no commonly accepted definition of the term, but such schools can be described as partnerships that create a curriculum that embeds the district-mandated learning goals into long-term projects that require students to create objects, exhibits, or museums. To develop a broader understanding of the museum-school phenomenon, this paper uses a qualitative case study methodology to examine four museum schools (in three school districts), create descriptive terminology, and develop continua of museum-school collaboration. The schools studied are: (1) the New York City Museum School; (2) the Museum Magnet Schools, St. Paul (Minnesota); (3) the Robert Brent Elementary School (Smithsonian Institution), District of Columbia; and (4) the Stuart-Hobson Middle School (Smithsonian Institution), District of Columbia. The units of analysis were the schools "as wholes" and one class from each. Thirty-two interviews with participants provided additional data. Five patterns of museum learning were common in these schools: (1) museum process apprenticeships; (2) creation of apprentice researchers; (3) knowledge-building communities; (4) project-enhanced learning; and (5) student ownership of projects. In all four schools, the district-mandated curriculum was incorporated into museum themes or units. The partnerships involved a high degree of interdependence among the collaborating institutions, although the details of the partnerships varied with the schools. A "continuum of partnership structure" was developed as increasing levels of partnership moved from institutional cooperation through strategic alliance to virtual corporation. Museum schools are a new approach to building learning environments that deserve greater study. (Contains 1 figure, 2 tables, and 20 references.) (SLD)

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1998 AREA Annual Meeting Paper

Kira S. King

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1998 AERA ANNUAL MEETING PAPER
MUSEUM SCHOOLS: INSTITUTIONAL PARTNERSHIP AND MUSEUM LEARNING
SESSION 3.20

Kira S. King, Ph.D.

Perspective And Theoretical Framework

Massive societal changes over the past twenty years have altered society's needs and—in turn—are driving museums and schools to re-design themselves (American Association of Museums, 1992; Reigeluth, 1994). Within formal education, schools are being challenged to adopt constructivist, project-enhanced, collaborative, and authentic curricula that are capable of preparing our children for the Information Age (Bednar, Cunningham, Duffy & Perry, 1991; Bonk & King, in press; Koschmann, 1996). In order to implement these new curricula, however, piecemeal school reform efforts are insufficient; instead, we need to entirely re-design our school systems (Jenlink, Reigeluth, Carr & Nelson, 1998; Reigeluth, 1994). In the museum field, museums are challenged to re-integrate education into every facet of their institutions, bringing it into their mission statements; to redefine museum/school partnerships; to increase community involvement; and to build stronger and more diverse visitor audiences.

In answer to these reform efforts, over the past ten years, a handful of museums and school districts across the nation have joined forces to create a new innovation that blends formal and informal learning—the museum school. While there is no commonly accepted definition of the term, museum schools can be described as projects in which a partnership between at least one museum and one school district is formed in order to create a curriculum that embeds the district-mandated learning goals into long-term projects requiring students to create objects, exhibits or museums.

These new partnerships are mutually beneficial to both the informal and formal educational environments. For example, museum schools provide museums with opportunities to develop stronger commitments to education, to redefine their relationships with schools, to build diverse audiences, to increase community involvement, and to expand their resources. For schools, these partnerships end the traditional isolation of the classroom, providing the real-world, project-enhanced learning that is so desperately needed. Also, since many museum schools are also magnet schools, they provide inner-city school districts seeking to de-segregate with an innovative curriculum capable of attracting students of diverse ethnic, socio-economic backgrounds, and achievement levels. And finally, for both fields, museum schools have made significant progress in bringing the worlds of formal and informal learning closer together, thereby helping stakeholders from both institutions understand each other's culture, organizational structure, and institutional goals. Representing tremendous advancements in educational reform for both informal and formal learning institutions, museum schools are exciting innovations that warrant focused study. However, as of yet, there is little or no published research on this phenomenon. This gap in the literature combined with the tremendous diversity among the existing museum schools, has resulted in a lack of common understanding and terminology; for example, few people can succinctly define the term "museum school."

In order to guide future museum school development and museum/school collaboration, this paper reviews dissertation research that described four museum schools, (located in three school districts), created definitions of key terminology, and developed continua depicting museum/school collaboration, museum school partnership and museum learning curricula (King, 1998).

Methodology

With the goal of developing a broad understanding of the museum school phenomenon and a continuum of museum school models, I adopted qualitative multiple case study methodology (Firestone & Herriott, 1984). The following museum schools located in three districts were visited and described: The New

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York City Museum School; The Museum Magnet School, St. Paul, MN; and The Robert Brent Elementary and Stuart-Hobson Middle Schools, Smithsonian Institution, District of Columbia, Washington, D.C.

As a qualitative study, the research design was emergent, and was guided by the primary research question, How can these four museum schools be represented as a typology of museum schools? The study was conducted in the following five major stages, with several cycles of simultaneous literature review, data collection, data analysis, and synthesis:

- literature review, dissertation committee and human subjects review,
- case studies (data collection & analysis, synthesis, literature review, peer debriefing, researcher subjectivity journal),
- with-in and cross-case analysis (analysis, synthesis, member checking, literature review, typology design, peer debriefing),
- follow-up survey implementation, continua design,
- final synthesis, write-up, and member checking.

For each case study, the unit of analysis was the school as a whole, and one grade level with its associated classroom teachers, school administrators, and museum educators. Each class was observed for approximately five days (Table 1); and a total of 32 participants were interviewed.

Table 1: Site Visitation Summary

Site	Grade Level	Site Visit Length	Curriculum Activities
New York City Museum School	7th Grade	4.5 days	First week of a new museum module.
Museum Magnet School	1st Grade & 4th Grade	Gr. 1 = 6 days Gr. 4 = 3 hr.	Last week of museum theme & exhibit opening.
Robert Brent Elementary School	1st Grade & Grade 5/6 (multi-aging)	4 days on site: Gr. 1 = 10.5 hrs Gr. 5/6 = 1 hr	First week after a school-wide museum theme and exhibit opening.
Stuart-Hobson Middle School	Grade 8	13 hrs over 4 days	Final week before the grade level exhibit opening.

After site visitation, with-in case analysis was conducted by sorting data into emergent themes, creating findings summaries for each participant and by condensing the findings into meta-matrices (Miles & Huberman, 1994). A meta-matrix is a table that summarizes the key comments from the participants across all of the emergent themes. After this step, a table was available for each theme that portrayed all of the major statements from each participant. Findings summaries were also available, and were sent to each participant for feedback (member checking).

After all within-case findings were synthesized, cross-case analysis was conducted by creating a mega-matrix (Miles & Huberman, 1994) that summarized all of the key findings for all of the participants and documents across all four museum schools. Therefore, after this stage, I had one large table portraying key learnings across all four sites. With the goal of increasing transferability, these findings were

incorporated into a survey that was sent to these four museum schools, as well as to 10 other museum/school programs.

Once all of the data were analyzed, the dissertation was written and subjected to several rounds of review from the professorial dissertation committee as well as key participants.

Findings and Conclusions

Terminology

Based upon my studies of four museum schools, I drafted the following definitions for terms that were coined by several museum school participants:

- **Museum learning** (Takahisa & Chaluisan, 1995): project-enhanced learning that utilizes hands-on exhibits or museum objects.
- **Museum process** (Finnerty, 1996): the learning process museum professionals engage in while researching objects and creating exhibits.
- **Museum school:** a school that is collaboratively designed and implemented through a partnership between a school district and at least one museum in order to implement museum learning with at least one of the following three application activities: object creation, exhibit creation, and museum creation.

Museum Learning

From the four museum schools that I observed, five patterns of museum learning appeared to be common among them: 1). Museum schools use museum learning and create museum process apprenticeships; 2). Museum schools create apprentice researchers; 3). Museum schools create knowledge-building communities; 4). Museum learning uses project-enhanced learning; 5). In museum learning, teachers promote student ownership by transferring much of the project and information management to students.

Briefly stated, my findings indicated that these four museum schools embedded the district-mandated curricula into museum themes or units in which students learned in a similar way that museum curators and exhibit developers learn while researching objects and creating exhibits. Typical student activities involved: observing an object or phenomenon; generating questions, brainstorming and exploration; gathering data, synthesizing findings by creating an exhibit, object, and research papers; disseminating key learnings outside of the classroom through school exhibit openings, presentations, and demonstrations; and reflection. Since this process is so closely related to the research process, we can say that museum schools create apprentice researchers. Furthermore, as can be seen Table 2, these museum units appear to be implementing project-enhanced learning (Pea, Edelson, Gomez, 1994).

Table 2: Museum Schools use Project-Enhanced Learning

Project-Enhanced Learning	Museum Learning
Long-term authentic projects	8 week museum themes
Inquiry	Brainstorming, exploration, synthesis.
Collaborative learning	Team teaching, cooperative learning
All students have same project	One theme, with many sub-projects
Culminating project	Objects, exhibits, museums
Communicating ideas	Exhibit openings; reflection

The focus of creating museum process and research apprenticeships can be expanded to suggest that the museum schools that I observed were striving to develop "knowledge-building communities" (Scardamalia & Bereiter, 1994) that focused on solving problems and exploring phenomena,

on building collective understanding through inquiry, on building distributed expertise, and on sharing information with a wider audience. And finally, while observing and interviewing participants, I noticed that there was a strong focus on shifting the ownership of the learning activities from teachers to students. It was the students who organized and sponsored the exhibit openings, and the teachers and museum educators who supported them in their endeavors.

Examples of the museum themes I observed are: the Worm Theme from the Museum Magnet School in St. Paul, where first graders learned about recycling and worms by creating their own exhibit on worms. The Colonial America museum module at the New York City Museum School where 7th graders learned about our country's history by spending 3 days per week at the Brooklyn Museum of Art, studying the period and portrait rooms, and creating their own portraits of important figures form Colonial America. And at the Stuart-Hobson Middle School, the Native American theme in which 8th graders created an impressive exhibit with their own artwork, beaded designs, authentic foods, murals, and life-size buildings, including an igloo, longhouse, teepee, and southwestern pueblo.

Museum Process Apprenticeship

Throughout the life of these museum learning units, museum educators worked extensively with teachers and students, helping embed the district-mandated curriculum into learning activities that mirrored the museum process. It is my belief that these strong collaborations between museum educators, teachers and students were instances of museum learning apprenticeship that closely resembled the concept of "learning or thinking apprenticeships" (Brown, Ash, Rutherford, Nakagawa, Gordon, & Campione, 1993). Cognitive apprenticeship involves situating learning in authentic contexts by engaging students in real-world projects and mentorship with experts and more capable peers. The main impetus behind this approach is the belief that learning cannot be divorced from the cultural context in which it will be applied (Brown, Collins, & Duguid, 1989). When we do teach out of context, the end result is "inert knowledge," which is knowledge that students simply cannot apply (Cognition and Technology Group at Vanderbilt, 1993). Cognitive apprenticeship attempts to place learning back in context, by providing students with authentic projects and subject matter experts to guide them through the activity.

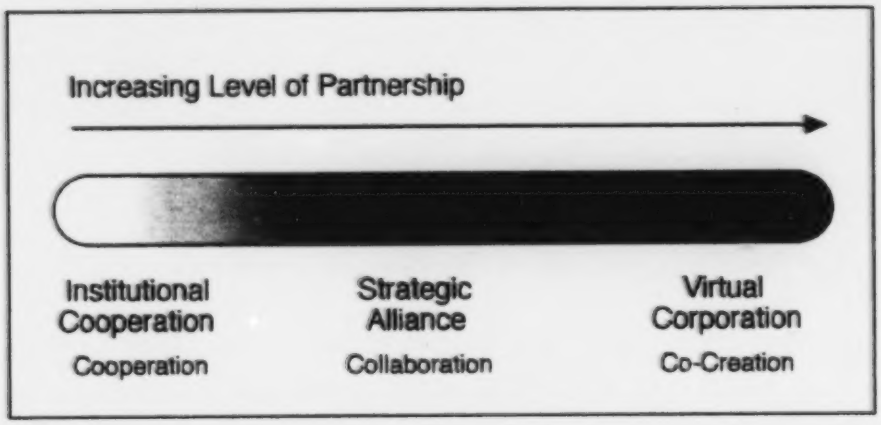
A major drawback of cognitive apprenticeship is that most schools do not have access to professionals in a wide variety of disciplines—such as mathematicians, scientists, artists, etc. (Brown et al., 1993). Instead, Brown et al. have suggested that a more appropriate goal is to create thinking apprenticeships in which children are engaged in their own research communities: "We argue that schools should be communities where students learn to learn" (p. 223).

The museum schools I observed seemed to be addressing both of these issues. First, since they had collaborations with many different types of museums, they were able to create apprenticeships with experts from a variety of fields, i.e., science, art, history, etc. This helped them expand upon the resources of more traditional schools, and to introduce their students to the culture and context of a variety of disciplines. Second, the schools' overall goal was to help students learn how to learn through the museum process. They were careful to stress that their goal was NOT to train students to become museum professionals. Instead, they were creating museum process apprenticeships, that focused on the way in which curators and exhibit developers learn as they research objects and create exhibits.

Institutional Partnership

All four of the museum schools I visited had extensive partnerships with one or more museums that involved a high degree of inter-dependence among the collaborating institutions. Furthermore, due to the nature of cognitive apprenticeship, all four museum schools had extensive collaborations with museum professionals. Many museum educators were on-site full-time, supporting teachers and administrators, teaching small and whole classes, and collaborating with teachers to design, implement and evaluate museum learning curricula. However, there was diversity in the structure of the partnerships themselves, which is depicted in my continuum of partnership structures, Figure 1.

Figure 1: Partnership Structure Continuum



The darkening of shading in the continuum depicts an increase in the level of collaboration and inter-dependence, as well as an increased amount of systemic change required to design and implement the program. In institutional cooperation, both the school and the museum remain as separate entities, with little or no cross over between the institutional and individual roles. The primary focus is on having museum professionals provide teachers with training in museum learning and the museum process. Therefore, after training at the museum, teachers then translate their new skills into museum curricula back in their classrooms. Museum professionals do not participate in curricular implementation.

The Museum Magnet School, Brent Elementary and Stuart-Hobson appeared to fit within the strategic alliance range of the continuum. In this structure, the museum and school collaborate towards the common goal of designing, developing, implementing and evaluating museum learning curricula. Therefore, there is a higher level of collaboration; and the lines between the two organizations become slightly blurred, as roles and responsibilities between school and museum, between teacher, administrator and museum professional, begin to shift. Museum educators are on-site on a regular basis supporting both teachers and students as they design and implement museum learning curricula. Still, to people both inside and outside the organization, it is clearly evident where the partnering organizations begin and end. Hence, the museum is clearly not responsible for the administration of the school, or the education of the students.

The New York City Museum School appeared to fit within the virtual corporation range. As such, it had extensive partnership with its museum partners; and the lines between museum and school were so blurred that participants had a hard time knowing where the school ended and the museums began. For example, a museum professional became co-director of the school, and museum educators were called "museum teachers" who worked with classroom teachers on all aspects of delivering the curriculum—including grading papers, writing report cards, and conducting parent-teacher conferences. Together, museum professionals and school stakeholders co-created the school and the curricula.

Educational Importance and Social Impact

This multi-case study will impact the fields of instructional design, educational psychology, educational systems design, and museum education. First, for the fields of instructional design and educational psychology, this research examined alternative instructional systems attempting to blend informal and formal learning and to situate learning in real-world contexts. This is critical since educational psychologists are challenging instructional designers to align their practices with constructivist cries for learning that takes place in authentic contexts (Bednar et al., 1991; Brown et al., 1989; Jonassen, 1991; Winn, 1991). However, while there are many calls for cognitive apprenticeship, project-based learning, and real-world learning environments, there are few descriptions of existing systems that attempt to do so. We need such information to better understand how to translate learning theory into instructional practice.

For school restructuring and educational change, these museum schools are examples of reform efforts that involve the design or redesign of educational systems from the ground up—rather than simply altering several components of existing programs. As such, they provide examples of alternative models that other schools might wish to incorporate into their own designs; and they poignantly depict the stress, frustration, and exhilaration of the change process that all new educational systems experience during the early stages of implementation.

For the fields of museum education and administration, this research helps correct three deficiencies that are restricting current reform efforts to expand the educational role of museums. In 1992, The American Association of Museums identified these three impediments as follows: the limited number of model programs, ". . . the absence of a body of professional literature, and the lack of contact with the broader field of education" (1992, p. 13). Describing and analyzing current museum schools and creating operational terminology, will help guide the design of future museum schools and smaller scale partnerships, build the literature base, and document efforts that seek to bring the worlds of formal and informal learning closer together.

As we approach the 21st century, we are faced with the challenge of creating new social institutions that will not only prepare us for the future, but that will also create the future that we envision for ourselves (Banathy, 1992). This includes creating schools that bring students and faculty of diverse ethnicity, socio-economic backgrounds, and academic achievement together, to create learning environments that celebrate multiple perspectives, and that bridge the current gap between school and community. Museum schools represent experiments in creating these new types of learning environments, and yet, few people from the educational research community or from the general pubic, are even aware of them. This research strives to bring that knowledge to a wider audience.

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